

## What Is Claimed Is:

1. A method for the assignment of phonemes to a lexicon of words, comprising:  
using a dynamic time warping algorithm to phonetically transcribe the words by  
assigning phoneme sequences to grapheme sequences of the words.

2. A method for the assignment of phonemes to the graphemes producing them  
in a lexicon having words (grapheme sequences) and their associated phonetic transcription  
(phoneme sequences), comprising:

a) in a first step, determining relative frequency with which phonemes and  
graphemes are assigned to one another for each assignment of phonemes and graphemes,

b) in a second step, creating for each word of the lexicon a two-dimensional  
matrix (incidence matrix), one index of which is given by the grapheme of the word, and the  
second index of which is given by the phoneme of the word,

c) selecting the relative frequencies belonging to the respective  
phoneme-grapheme pair and determined in the first step as entries of the matrix,

d) in a third step, logically combining each matrix entry with the aid of a  
mathematical operation with the extreme value of the following three preceding matrix  
entries:

the entry for the same phoneme and the preceding grapheme in the  
word,

the entry for the preceding phoneme and the same grapheme in the  
word, and

the entry for the preceding phoneme and the preceding grapheme in  
the word,

e) using the first grapheme and the first phoneme of the word as the starting  
point in the mathematical operation, and using the modified entries of the matrix in  
determining the extreme values, the modified entries being respectively yielded from the  
mathematical operation,

f) determining which of the three preceding matrix entries was extreme to  
thereby determine a step direction for this matrix entry,

g) in a fourth step, defining the step direction determined for the matrix entry,  
starting from the matrix entry for the last phoneme and the last grapheme, and proceeding  
along a path through the matrix up to the matrix entry for the first phoneme and the first  
grapheme, and

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h) using the matrix elements along the path to define the assignment of graphemes to phonemes of the word.

3. The method as claimed in claim 2, wherein the relative frequencies in the first step are determined by selecting words from the lexicon in the case of which the number of the graphemes and the number of the phonemes coincide, for the selected words, the graphemes and phonemes are assigned to one another in the sequence of the specification of their graphemes and phonemes in the lexicon.

4. The method as claimed in claim 1, wherein after execution of the assignment of graphemes to phonemes for each word of the lexicon, these assignments are used to determine the position-dependent relative frequency with which at least one of the following combination occur:

- a phoneme produced by two or more graphemes,
- two or more phonemes produced by a grapheme,
- two or more graphemes assigned to a phoneme, and
- a grapheme assigned to two or more phonemes.

5. The method as claimed in claim 4, wherein the assignment of graphemes to phonemes within a word is corrected with the aid of the position-dependent relative frequencies.

6. The method as claimed in claim 3, wherein after execution of the assignment of graphemes to phonemes for each word of the lexicon, these assignments are used to determine the position-dependent relative frequency with which at least one of the following combinations occur:

- a phoneme produced by two or more graphemes,
- two or more phonemes produced by a grapheme,
- two or more graphemes assigned to a phoneme, and
- a grapheme assigned to two or more phonemes.

7. The method as claimed in claim 6, wherein the assignment of graphemes to phonemes within a word is corrected with the aid of the position-dependent relative frequencies.

8. The method as claimed in claim 7, wherein

after assigning graphemes to phonemes for selected words in the sequence of the

the recalculated position dependent relative frequencies are used to again assign

9. The method as claimed in claim 8, wherein in order to determine the relative

10. The method as claimed in claim 2, wherein

the matrix entry for the first phoneme and the first grapheme of each word is set to 1;

the matrix entry for the last phoneme and the last grapheme of each word is set to 1;

the matrix entry for the first phoneme and the last grapheme of each word is set to 0;

and

the matrix entry of the last phoneme and the first grapheme of each word is set to 0.

11. The method as claimed in claim 2, wherein if in the determination of the

maximum value of the three preceding matrix entries the matrix entry for the preceding

phoneme and the preceding grapheme in the word and one of the other two entries are of

equal magnitude, the matrix entry for the preceding phoneme and the preceding grapheme

in the word is regarded as a maximum.

12. A computer system for the assignment of phonemes to a lexicon of words,

a storage device for storing a computer program on a storage medium; and

a processing unit for loading the computer program from the storage device and for

executing the computer program so as to use a dynamic time warping algorithm to

atically transcribe the words by assigning phoneme sequences to grapheme sequences

13. A computer readable medium storing a program for controlling a computer to perform a method for the assignment of phonemes to the graphemes producing them in a lexicon having words (grapheme sequences) and their associated phonetic transcription (phoneme sequences), comprising:

- a) in a first step, a determining relative frequency with which phonemes and graphemes are assigned to one another for each assignment of phonemes and graphemes,
- b) in a second step, creating for each word of the lexicon a two-dimensional matrix (incidence matrix), one index of which is given by the grapheme of the word, and the second index of which is given by the phoneme of the word,
- c) selecting the relative frequencies belonging to the respective phoneme-grapheme pair and determined in the first step as entries of the matrix,
- d) in a third step, logically combining each matrix entry with the aid of a mathematical operation with the extreme value of the following three preceding matrix entries:
  - the entry for the same phoneme and the preceding grapheme in the word,
  - the entry for the preceding phoneme and the same grapheme in the word, and
  - the entry for the preceding phoneme and the preceding grapheme in the word,
- e) using the first grapheme and the first phoneme of the word as the starting point in the mathematical operation, and using the modified entries of the matrix in determining the extreme values, the modified entries being respectively yielded from the mathematical operation,
- f) determining which of the three preceding matrix entries was extreme to thereby determine a step direction for this matrix entry,
- g) in a fourth step, defining the step direction determined for the matrix entry, starting from the matrix entry for the last phoneme and the last grapheme, and proceeding along a path through the matrix up to the matrix entry for the first phoneme and the first grapheme, and
- h) using the matrix elements along the path to define the assignment of graphemes to phonemes of the word.